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Application No.: 10/820,389

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Docket No.: 542262000200

AMENDMENTS TO THE CLAIMS

Claim 1 (currently amended): An inclination measurement and display device, comprising:

a conductive chamber containing a fluid, wherein the conductive chamber comprises an annular chamber having an inner wall and an outer wall;

a plurality of electrodes provided in the chamber, wherein at least three electrodes are partially immersed in the fluid, each of the at least three electrodes including more than one side, and more than one side of each of the at least three electrodes being partially immersed in the fluid, and wherein each of said plurality of electrodes is provided approximately equidistantly from the inner wall and the outer wall of the annular chamber;

a processing module configured to measure an electrical characteristic between each of the plurality of electrodes and the conductive chamber and to determine an overall angle of inclination and the direction of inclination of the chamber; and

a display for displaying a numerical value corresponding to the overall angle of inclination and an indication of the direction of inclination.

Claim 2 (original): The device of claim 1, wherein said indication of the direction of inclination comprises a plurality of indicators positioned radially about said numerical value.

Claim 3 (original): The device of claim 1, wherein the electrical characteristic comprises capacitance.

Claim 4 (original): The device of claim 1, wherein the fluid comprises a dielectric fluid.

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Claim 5 (canceled)

Claim 6 (original): The device of claim 5, wherein said plurality of electrodes comprises three electrodes spaced approximately equidistantly from each other in the annular chamber.

Claim 7 (canceled)

Claim 8 (original): The device of claim 7, wherein said plurality of electrodes comprise conductive plates provided in the annular chamber.

Claim 9 (original): The device of claim 1, wherein said processing module comprises:

an oscillator; and

a microcontroller configured to count the oscillator's output cycles.

Claim 10 (original): The device of claim 9, wherein said processing module further comprises:

a controllable switch for selectively coupling the oscillator with each of the plurality of electrodes.

Claim 11 (currently amended): An inclination measurement and display device, comprising:

an enclosure having a reference surface;

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an inclination sensor provided in the enclosure and being configured to measure a first electrical characteristic indicative of an inclination of the reference surface along a first axis and a second electrical characteristic indicative of an inclination of the reference surface along a second axis, wherein said the inclination sensor outputs a first signal corresponding to the first measured electrical characteristic comprising capacitance and a second signal corresponding to the second measured electrical characteristic, the inclination sensor including at least one electrode having more than one side partially immersed in a fluid, and the inclination sensor comprising a conductive housing defining an annular chamber having an inner wall and an outer wall, a plurality of electrodes provided in the chamber, and a dielectric fluid provided in the chamber,

a processing module for receiving the first and second signals from the inclination sensor and processing the first and second signals to determine the overall angle of inclination and the direction of inclination of the reference surface; and

a display for displaying a numerical value corresponding to the overall angle of inclination and a directional indication corresponding to the two-dimensional direction of inclination.

Claim 12 (original): The device of claim 11, wherein said directional indication comprises a plurality of indicators positioned radially about said numerical value.

Claims 13-15 (canceled)

Claim 16 (original): The device of claim 15, wherein each of said plurality of electrodes are provided approximately equidistantly from the inner wall and the outer wall of the annular chamber.

Claim 17 (original): The device of claim 15, wherein said plurality of electrodes comprise conductive plates provided in the annular chamber.

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Claim 18 (original): The device of claim 11, wherein:

said inclination sensor comprises a plurality of electrodes.

Claim 19 (original): The device of claim 18, wherein said processing module comprises:

an oscillator; and

a microcontroller configured to count the oscillator's output cycles.

Claim 20 (original): The device of claim 19, wherein said processing module further comprises:

a controllable switch for selectively coupling the oscillator with each of the plurality of electrodes.

Claim 21 (currently amended): A method of measuring inclination, comprising:

measuring a first electrical characteristic indicative of an inclination of a reference surface of an enclosure along a first axis and a second electrical characteristic indicative of an inclination of the reference surface along a second axis, wherein measuring the first and second electrical characteristics include partially immersing more than one side of at least one electrode in a fluid and measuring an electrical characteristic of the fluid contained in a chamber in three non-parallel directions;

outputting a first signal corresponding to the first measured electrical characteristic and a second signal corresponding to the second measured electrical characteristic;

processing the first and second signals to determine the overall angle of inclination and the direction of inclination of the reference surface;

displaying a numerical value corresponding to the overall angle of inclination; and

displaying an indication of a direction of inclination.

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Claim 22 (previously presented): The method of claim 21, wherein said measuring the first electrical characteristic and the second electrical characteristic comprises:

measuring an electrical characteristic of the fluid contained in a chamber in a plurality of directions.

Claim 23 (canceled)

Claim 24 (currently amended): A method of measuring inclination, comprising:

measuring an electrical characteristic of a fluid contained in a chamber in a plurality of directions using at least three electrodes partially immersed in the fluid, wherein each of the at least three electrodes include more than one side, and more than one side of each of the at least three electrodes are partially immersed in the fluid, and the chamber comprises an annular chamber having an inner wall and an outer wall;

processing the measured electrical characteristics to determine an overall angle of inclination and the direction of inclination of the chamber;

displaying a numerical value corresponding to the overall angle of inclination; and

displaying an indication of a direction of inclination.

Claim 25 (original): The method of claim 24, wherein said measuring the electrical characteristic comprises:

in each of the plurality of directions, measuring a capacitance value between a pair of electrodes immersed in the fluid contained in the chamber, wherein the fluid is a dielectric fluid.

Claim 26 (original): The method of claim 24, wherein:

said measuring the electrical characteristic comprises measuring a capacitance value between each of at least three electrodes and the chamber to generate three capacitance values; and

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said processing the measured electrical signals comprises processing the three capacitance values to determine the overall angle of inclination and the direction of inclination of the chamber.

Claim 27 (original): The method of claim 26, wherein:

said processing the measured electrical signals comprises processing the three capacitance values to calculate a capacitance value in two non-parallel directions.

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